Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Cellular Priority Access for National Security and Emergency Preparedness Telecommunications)	)	WT Docket 96-86

COMMENTS OF THE NATIONAL EMERGENCY NUMBER ASSOCIATION

The National Emergency Number Association ("NENA") hereby comments on the Petition for Rulemaking ("Petition") of the National Communications System ("NCS") filed October 19, 1995.[1] NCS, through its Executive Agent, the Secretary of Defense, "urges the Commission to adopt rules to provide priority access to cellular spectrum for National Security/Emergency Preparedness (NS/EP) responsiveness" by creating a Cellular Priority Access Service ("CPAS"). NCS suggests that CPAS rules could be located in a Part 64 appendix, where the somewhat analogous Telecommunications Service Priority ("TSP") regulations now may be found.

Statement of Interest

NENA is a not-for-profit corporation founded in 1982 to foster the implementation and advancement of a universal emergency telephone number system, accessible in the United States by dialing 9-1-1. NENA's approximately 5000 members in this country and abroad are employed by state and local emergency communications, management and response

1 Public Notice, DA 96-604, April 18, 1996.

agencies; telecommunications service providers; and emergency communications equipment vendors and consultants.

NENA has been pleased to serve on the Cellular Priority Access Subgroup (Petition, 9) of the Wireless Services Task Force of the National Security Telecommunications Advisory Committee ("NSTAC"), and generally supports the NCS Petition with the qualifications and questions raised below.

Background

The cellular industry and the standards bodies through which it works have included "call precedence" as an important feature of 9-1-1 emergency communication. The 1994 report of an Emergency Services Joint Experts Meeting recommended that "an originating 9-1-1 call should be given priority over other non-emergency call originations."[2] The Report described Priority Access and Channel Assignment ("PACA") and Priority Queuing methods of prioritizing access for emergency calls, and recommended that "future 800 MHz air interface standards should support the PACA feature" most recently described in IS 53A of IS 41, Revision C.[3]

The 1994 JEM recommendation was picked up later that year by the FCC Notice of Proposed Rulemaking in CC Docket 94-102. There the Commission proposed to require that, by one year from the release of an adopting order, "911 calls must be assigned priority over non-emergency service calls."[4] That proposal, of course, is different from the instant

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2 Telecommunications Industry Association Committee TR45, TR94.08.23.11, August 24, 1995, page 4.

3 Excerpted at Attachment A hereto.

4 *Compatibility with Enhanced 911 Calling Systems,* 9 FCC Rcd 6170 (1994), at ¶ 44. Neither the FCC proposal nor the NCS Petition would interrupt calls in progress. The

Petition, which suggests five priority levels within a particular emergency category defined as NS/EP.[5]

The Petition. Originally, NCS appeared to believe the FCC was proposing to "assign mobile calls to E911 the highest priority for completion"[6] rather than simply to give precedence to 9-1-1 calls over non-emergency calls. The Petition itself makes no explicit reference to 9-1-1, but amply indicates that local and state interests in emergency communications and response must be accommodated in any system of emergency call precedence:

> The proposed CPAS rules recognize that state and local emergency response personnel will likely be on the scene first. State and local interests are therefore given status at least equal to that of federal authorities for access priorities. (Petition, 10)
>
> Under CPAS, States may act as "authorizing agents." This change is being made at the specific request of the State and local participants. (Petition, 11)
>
> Thus, the proposed priorities and criteria effectively give local officials the highest priority in all categories in the immediate aftermath of a disaster. (Petition, 13)
>
> Priority levels 2 and 3 are assigned to the "first responders." (Petition, 14)

Commission adopted June 12, 1996 a Report and Order partially resolving the wireless issues in the docket, but whether it spoke to call precedence cannot be known until the text of the decision is released. Nether the press release (Report No. DC 96-52) nor the discussion at the adopting meeting mentioned the subject.

5 47 C.F.R. Part 564, App. A, 3.f., "telecommunications services which are used to maintain a state of readiness or to respond to and manage any event or crisis (local, national or international), which causes or could cause injury or harm to the population, damage to or loss of property, or degrades or threatens the NSEP posture of the United States."

6 Reply Comments of the Secretary of Defense, CC Docket No. 94-102, March 17, 1995, 1.

While making the offering of CPAS for NS/EP purposes purely discretionary with cellular carriers, the Petition proposes that if the election is made, the provided service must follow the rules. (App. B, A.1) The only mechanism for such an offering discussed in the Petition is the previously referenced TIA/EIA PACA standard, IS-53A of IS 41 (Rev. C).

NENA Qualifications and Questions

NENA has been pleased to serve on the CPAS Subgroup giving rise to the Petition, which it endorses with the following suggestions and topics of additional inquiry.

• *Voluntariness.* The Petition does not discuss why the adoption of emergency call precedence, which NCS views as supremely important and urgent, should be at the seemingly unfettered discretion of cellular carriers who hold radio licenses in the public interest. This would appear to be at odds with the assessment (Petition, 8) that "51 different priority access schemes would prove totally unworkable." Similar fragmentation in the use of a national resource for NS/EP purposes is invited by a patchwork of go-no go cellular serving areas, some of which could be adjacent to each other. It is also at odds with the tentative FCC view that call prioritization, as between emergency and non-emergency calls, is a matter of "Phase 1" importance as a national requirement. (Note 4, *supra*).

If the answer has to do with the economics of costly PACA adoptions that seem unlikely to pay for themselves commercially, perhaps the answer would be to limit the cellular carrier's ability to refuse the requests of customers -- especially federal, state and local government agencies -- who

are ready, willing and able to pay the PACA handset and network costs, either in rates or by other funding mechanisms.[7]

• *Permanent vs. Demand Subscription.* The current PACA feature description envisions two types of service:

> In the Permanent option the feature is always available and is used automatically whenever the subscriber attempts to originate a call. In the Demand option the feature is available only on request. The subscriber requests PACA by using a feature code with an origination request.[8]

The Demand option appears to be the principal use NCS has in mind Thus, qualified local, State and federal users would be assigned codes associated with Levels 1-5, as appropriate. This would include emergency managers, communicators and responders who are not manning PSAPs to receive 9-1-1 calls, but instead are initating and receiving calls between and among themselves in carrying out their crisis assignments.

PSAPs in crisis communities will receive not only crisis-associated calls but also the everyday pleas for assistance that should not go unheeded if help is available. This is why NENA believes that 9-1-1 calls, identified as such by their three dialed digits, should be assigned a PACA priority level as a Permanent option. We are persuaded that Level 5 is the appropriate priority for this critical means of preserving lives and property. As indicated by the analysis at Attachment B, 9-1-1 operations could coexist comfortably with the NCS-proposed use of Disaster

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7 This would be analogous to the not-yet-issued decision adopted in Docket 94-102 on June 12, 1996, where cellular and other wireless carriers' obligations with respect to caller identification and location are made contingent upon a "mechanism in place for the recovery of costs." FCC news release, June 12, 1996.

8 IS 53A, Section 5.17, June 25, 1995 (Attachment A hereto).

Recovery. In fact, a reliable 9-1-1 system would be a key index of post-crisis restoration.[9] This would fit with the FCC proposal in Docket 94-102 that emergency calls such as 9-1-1 be given priority over non-emergency uses of wireless communications.

The placement of 9-1-1 calls within the NCS hierarchy -- or their effective assignment to an emergency level by the FCC, distinguishing them from non-emergency communications -- would mean that a cellular carrier electing to offer CPAS for emergency communications (1) would be required to give NS/EP rank to 9-1-1 calls, or (2) would be required to afford precedence to 9-1-1 calls by order of the Commission. Under either of these mandates, 9-1-1 features should be commensurate with those of NS/EP precedence, such as retention of priority across Mobile Switching Centers ("MSCs").

• *Complementary calling patterns.* Just as local emergency communicators and responders often bear the early brunt of calls in a crisis that grows to state or national importance, so call intensity and volume -- in NENA's experience -- will track the levels of jurisdictional activity. Early in a developing emergency, there are sharp upward spikes in local calls per unit of time. (Attachment B, 2-3) Usually, these will taper off as radio, TV, newspapers and other local communications media are able to inform, and often to calm, local residents and their anxious relatives and friends in other communities or states. At this point, any State or federal responses to the crisis will be peaking in their need for channels of radio communication. The typical result is that 9-1-1 usage tends to complement

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9 The current version of PACA suggests a minimum of eight and a maximum of 15 priority levels. Ostensibly, NCS is proposing the top five levels for NS/EP. In times of non-emergency, Level 5 calls to 9-1-1, as a Permanent option, presumably would go the head of any queue since Levels 1-4 would not be in use.

rather than compete with NS/EP requirements. Such calls constitute early warning and facilitate first response, but do not later interfere with long-term crisis management.

CONCLUSION

For the reasons discussed, the Commission should grant the NCS Petition with the qualifications, and considerations of further exploration, noted above.

Respectfully submitted,

NATIONAL EMERGENCY NUMBER ASSOCIATION

By _____

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5.17 Priority Access and Channel Assignment (PACA)

Priority Access and Channel Assignment (PACA) allows a subscriber to have priority access to voice or traffic channels on call origination.

This feature permits a subscriber to obtain priority access to voice or traffic channels by queuing these subscribers' originating calls when channels are not available. When a channel becomes available, the queued subscriber is served on a first come first served and a priority basis.

The subscriber is assigned one of *n* priority levels at subscription time (where *n* has a minimum of eight and a maximum of fifteen). Priority levels are defined as 1, 2, 3,...,*n*, with 1 being the highest priority level and *n* being the lowest priority level. N = 15

The invocation of PACA is determined by subscription to one of two options: Permanent or Demand. In the Permanent option the feature is always available and is used automatically whenever the subscriber attempts to originate a call. In the Demand option the feature is available only on request. The subscriber requests PACA by using a feature code with an origination request.

Call originations to priority access service codes or Directory Numbers (e.g., 9-1-1, fire, police medical) should invoke PACA using an independent priority level assigned to each number by the serving service provider. The priority used for the call shall be the higher of the dialed number's priority level or the subscriber's priority level.

The subscriber is considered to be busy while it waits for a PACA channel to be assigned.

PACA does not impact a subscriber's normal ability to originate calls or to receive calls.

Applicability to Telecommunications Services.

PACA feature shall be applicable to originating telecommunications services that require a voice or traffic channel assignment.

5.17.1 Normal Procedures With Successful Outcome

Authorization

PACA may be generally available or may be provided after pre-arrangement with the service provider.

2-1 Optionally, include the AnnouncementCode parameter in the AnnouncementList parameter set to an appropriate announcement.

2-2 Include the FeatureResult parameter set to *Unsuccessful* to indicate unsuccessful feature operation.

3 ENDIF.

4 Set PointOfReturn to *ToneTermination*.

5 Return to calling task via the PointOfReturn.

5.17 PRIORITY ACCESS AND CHANNEL ASSIGNMENT (PACA)

5.17.1 HLR PACA Per Call Invocation

1 IF PACA is authorized:

1-1 Relay the OneTimeFeatureIndicator parameter with *Priority Access and Channel Assignment (PACA)* activated.

1-2 Include the PACAIndicator parameter set to the currently authorized Priority Level and the subscriber's permanent activation status.

1-3 Include the FeatureResult parameter set to *Successful* to indicate successful feature operation.

1-4 Execute the "Termination Address Expansion" task (see 6.2.1).

2 ELSE:

2-1 Relay the OneTimeFeatureIndicator parameter unchanged.

2-2 Include the FeatureResult parameter set to *Unsuccessful* to indicate unsuccessful feature operation.

3 ENDIF.

4 Set PointOfReturn to *ToneTermination*.

5 Return to calling task via the PointOfReturn.

5.17.2 MSC PACA Call Origination Invocation

Upon determining that an idle voice or traffic channel is not available for an origination and that PACA may apply, the Serving MSC shall perform the following:

1 IF a voice or traffic channel has been seized:

1-1 Return to calling task indicating *success*.

2 ELSEIF a voice or traffic channel is available:

2-1 Return to calling task indicating *success*.

3 ELSEIF the *Priority Access and Channel Assignment (PACA)* of the OneTimeFeatureIndicator parameter is active OR IF the *Permanent Activation (PA)* of the PACAIndicator parameter is active OR IF PACA is invoked by the dialed number (e.g., 9-1-1, *-9-1-1):

3-1 Determine the PACA priority level appropriate for this service request based upon the subscriber's PACA Level profile information, the received PACAIndicator parameter PACA Level (valid for this call only) and the identified dialed number (and its associated PACA Level).

3-2 Enter this service request into the bottom of the PACA queue of the determined priority level (if required appropriately displace a lower level queued service request entry).

ATTACHMENT B

From: John R. Melcher *

To:

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On Thursday, June 13, we participated in a very successful meeting with Bernie Farrell, Jonathan Bae and others from the NCS at the offices of their consultant, Booz, Allen & Hamilton in McLean, VA. After reviewing the latest products of the OPNET model run by the consultants, I submit the following observations and recommendations.

Booz Allen utilizes the OPNET software package, a system commonly used and widely respected for network configuration and optimization. They have run these models in numerous ways with varying data elements, some pulled from thin air and most from anecdotal information. Our efforts focused on providing more accurate data elements reflecting bona-fide statistical 9-1-1 call data, historical calling patterns and insight into 9-1-1 caller behavior.

It should be noted that the rush to complete analysis prior to the FCC's comment deadline could have been avoided had the existence of the consultant's computer modeling efforts been made available in the first few rounds of meetings between public safety representatives, NCS and CTIA.

By making several assumptions that would cover a broad range of calling scenarios, we were able to plug in several data elements that should cover the broad spectrum of concerns on both sides of the discussion. Each model takes about one day of computer time to run, so a substantial bit of time was devoted to producing the report data.

Each model assumes (for the sake of average) that a cell site consists of 45 channels and that each queue consists of 20 slots. Alternate configurations as well as catastrophic loss of network resources would, of course, skew the data. No effort was made (other than conjecture) to address this aspect as the scope of data would be incredibly difficult to wade through.

No effort was made to account for any analog signaling schemes currently in use, as the platform adopted for CPAS deployment is PACA (Priority Access Channel Assignment) which is a feature option incorporated in IS-53, revision C.

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* John Melcher is Director of Management Information Systems for the Greater Harris County (Houston) 9-1-1 Emergency Network, and a member of both NENA and the Associated Public-Safety Communications Officials-International ("APCO").

Therefore, all data assumes the use of PACA by the mobile station for assignment in the priority queue.

The effect on POTS traffic varies from about two percent to about seven percent impact. This effect is negligible as the normal blockage of POTS traffic is already phenomenal in overload conditions. Overload factors of two times normal traffic, four times normal traffic (the highest in an emergency reported to date by any wireless carrier) and eight times normal traffic were factored into the model data.

The models were run with the following variances as well as several combinations of these variances:

- 9-1-1 and NS/EP users having five percent of POTS traffic each;
- 9-1-1 and NS/EP users having ten percent of POTS traffic each;
- 9-1-1 having five percent and NS/EP users having ten percent of POTS traffic, respectively;
- 9-1-1 users having an average call duration in the wireless system (including holding time) of three minutes;
- 9-1-1 users having an average call duration in the wireless system (including holding time) of one and one-half minutes;
- 9-1-1 users having an average call duration in the wireless system (including holding time) of one minute;
- NS/EP users having an average call duration in the wireless system (including holding time) of five minutes;
- NS/EP users having an average call duration in the wireless system (including holding time) of ten minutes;
- Priorities assigned to each type of user from level one to level five with level one being the highest. (It should be noted that the lowest level of priority thought to be of value to the 9-1-1 emergency services community is level 5.)

Additional assumptions were made though the use of historical 9-1-1 calling patterns. These include, but are not limited to:

- 9-1-1 usage in a localized emergency (within the coverage of only one to three cell sites) is heaviest during the first few minutes after the occurrence of the incident. Call volume is initially intense with the number of calls

dropping dramatically post incident reporting time. The duration of these calls, on average is extremely short in that most are processed by the simple acknowledgment of the incident as already having been reported.

- 9-1-1 usage in a more widespread emergency (tornado, hurricane, earthquake) tend to be spread geographically across more cell sites and thereby distributed across more cell channels and system queue slots.

- Local trunking at 9-1-1 PSAP's will serve to limit the number of inbound calls more quickly than the lack of wireless voice channel access.

In all runs, it was profoundly evident that 9-1-1 and NS/EP users can co-exist without negatively affecting one another within the PACA architecture. No blockage occurred with 9-1-1 at a level five until a four times normal traffic scenario was introduced into the model. Even at that volume of call traffic, blockage was limited to less that one percent and delay less than eight seconds.

It should be acknowledged that the impressive nature of this data ALSO takes into account the standard two percent blocking factor commonly used in engineering wireless networks. In an eight times overload, all users at all levels experienced call blocking and long delays.

CERTIFICATE OF SERVICE

I hereby certify that on this 17th day of June, 1996 a copy of the foregoing COMMENTS OF THE NATIONAL EMERGENCY NUMBER ASSOCIATION was served upon the following recipients :

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